

TAPE LOADING DEVICEBACKGROUND OF THE INVENTION1) Field of the Invention

This invention relates to a tape loading device which is incorporated in a magnetic recording and reproducing device or the like such as, for example, a VTR (video tape recorder).

2) Description of the Prior Art

A tape loading device is already known wherein a tape guide is slidably moved along a path, passing in front of an erasing head carried on a movable member, to draw out a tape from within a cassette loaded in position and extend the tape along the erasing head and a guide cylinder in order to load the tape to its loaded position.

Such a conventional tape loading device is constituted such that, upon sliding movement of the tape guide, it is engaged with a side face of the movable member and pushes the movable member to pivot in one direction around an axis against the biasing force of a return spring to move the erasing head out of a locus of sliding movement of the tape guide so that the erasing head may not interfere with a tape being guided by the

tape guide until after the tape guide passes in front of the erasing head. Accordingly, if the tape guide is acted upon by vibrations caused by a resisting force of the movable member during sliding movement of the tape guide, the tape may readily run off an annular groove of a vertical pole on the tape guide. If this actually occurs, such tape loading operation may fail or may not be performed smoothly so that the tape may be slackened upon such tape loading operation.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide a tape loading device wherein possible slackening of a tape upon tape loading operation can be prevented effectively.

In order to resolve the problem described above, according to the present invention, a tape loading device wherein a tape guide is slidably moved along a path, passing in front of an erasing head carried on a movable member, to draw out a tape from within a cassette loaded in position and extend the tape along the erasing head and a guide cylinder in order to load the tape to its loaded position, comprises a movable member driving means for keeping the movable member in an operative position in which the movable member and

the erasing head do not interfere with the path of the tape guide until after the tape guide passes in front of the erasing head and for causing, after the tape guide has passed in front of the erasing head, the movable member to move to an operative position in which the erasing head on the movable member is in contact with the tape in its loaded position.

With the tape loading device, the tape guide can pass in front of the movable member and the erasing head without being contacted or interfered by the movable member nor by the erasing head, and after the tape guide has passed in front of the movable member and the erasing head, the movable member is moved until the erasing head thereon is contacted with the tape being guided by the tape guide.

Thus, since the tape guide is slidably reciprocated without contacting with the movable member, a tape loading operation can be performed smoothly. Consequently, upon loading of a tape, it will not run off an annular groove of a vertical pole on the tape guide. Accordingly, no slackening of the tape will appear for a time until it is extended along the erasing head and a guide cylinder after it has been drawn out from within a cassette.

Specific embodiments of the present invention

will now be described in detail by way of example with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a tape loading device of the present invention in a position before a tape is loaded;

FIG. 2 is a plan view of the tape loading device of FIG. 1 in another position after a tape has been loaded;

FIG. 3 is a plan view of a tape loading device showing another embodiment of the present invention, and

FIG. 4 is a plan view of a conventional tape loading device.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENTS

At first, an exemplary conventional tape loading device will be described briefly with reference to FIG. 4. The tape loading device shown includes a pair of tape guides c for drawing out, by means of vertical poles g thereon, a tape not shown from within a cassette not shown loaded in position and extending the tape along an erasing head a and a guide cylinder b. The tape guides c are mounted for sliding movement in guide slots h formed in a chassis h and are connected by a mechanism not shown so as to be moved by a motor d. The

erasing head a is carried on a movable member e which is supported at one end thereof for pivotal motion near one of the guide slots h¹ and is normally biased by a torsion coil spring f to a position in which one side face e¹ thereof partially extends over the one guide slot h¹ of the chassis h.

Accordingly, upon sliding movement of the tape guides c for loading of a tape, the tape guide c in the one guide slot h¹ is soon engaged with the one side face e¹ of the movable member e and pushes the movable member e to pivot in a counterclockwise direction in FIG. 4 against the biasing force of the return spring f to move the erasing head a out of a locus of sliding movement of the tape guide c so that the erasing head a may not contact or interfere with the tape being loaded, thereby passing in front of the erasing head a. Also upon sliding movement of the tape guides c in the reverse direction for unloading the tape, the movable member e is similarly pivoted by the associated tape guide c to allow the tape guide c to pass in front of the erasing head a. In this manner, one of the tape guides c is always engaged with the movable member e upon reciprocal sliding movement thereof for loading and unloading of a tape.

Referring now to FIGS. 1 and 2, a preferred

embodiment of tape loading device of the present invention will be described. The tape tape loading device is generally denoted at 2 and is located on a chassis 1 of a magnetic recording and reproducing device such as, for example, a VTR (video tape recorder) or the like. The tape loading device 2 is designed so as to draw out a magnetic tape from within a cassette in a loaded position to which the cassette has been brought by a cassette loading mechanism not shown and extend the magnetic tape over a predetermined angular range on an outer peripheral face of a guide cylinder 3 which is provided for rotation at a predetermined location on an upper face of the chassis 1. The tape loading device 2 includes a pair of loading arms 4, and a gear mechanism 5 for moving the loading arms 4 in a cooperative relationship with each other. Each of the loading arms 4 includes a first arm member 4a, and a second arm member 4b connected at one end thereof for pivotal motion to one end of the first arm member 4a. The other ends of the first arm members 4a are supported for back and forth pivotal motion within a predetermined angular range at locations near the guide cylinder 3 on a lower face of the chassis 1. A leading guide block or tape guide 6 is securely mounted at the other end of each of the second arm members 4b (only one is shown), and the

leading guide blocks 6 (only one is shown) are engaged for sliding movement in guide slots 7 (only one is shown) of a predetermined shape formed at locations of the chassis 1 on opposite sides with respect to the guide cylinder 3. An inclined pole 8 and a vertical pole 9 for guiding a tape thereon are implanted on an upper face of each of the leading guide blocks 6. The inclined poles 8 and vertical poles 9 extend upwardly through the guide slots 7 and above the chassis 1. A pair of stoppers 10 for defining limit positions of sliding movement of the leading guide blocks 6 in one direction are located adjacent one ends of the guide slots 7 on the chassis 1. Meanwhile, the gear mechanism 5 includes a pair of mutually meshing gears 11 mounted for cooperative rotation via springs (not shown) at the other ends of the first arm members 4a, and a left-hand side one of the gears 11 is connected to a motor (not shown) by way of a motion transmitting mechanism (not shown) so that as the motor is driven to rotate forwardly and reversely, the loading arms 4 may make expanding and contracting motions in a known manner to reciprocally slide the leading guide blocks 6 along the guide slots 7.

A movable member 12 is arranged at a location near and outside a left-hand side one of the guide slots

2 on the upper face of the chassis 1. The movable member 12 is supported at a substantially central portion thereof for pivotal motion on the chassis 1 by means of a shaft 13. An impedance roller 13a is rotatably mounted on the shaft 13. An erasing head 14 is carried at one end portion of the movable member 12.

The movable member 12 is normally biased in one direction, that is, in a clockwise direction by a coil spring 15. The coil spring 15 is secured at one end thereof to a laterally projected end of the movable member 12 and at the other end thereof to the upper face of the chassis 1. A stop 16 for defining a limit position of pivotal movement of the movable member 12 in the clockwise direction is mounted in position on the upper face of the chassis 1.

A movable member driving means 17 is associated with the movable member 12. The movable member driving means 17 includes a slide plate 18 and a pivotal plate 19. The slide plate 18 is mounted for sliding movement within a predetermined range on the lower face of the chassis 1. The slide plate 18 has a laterally extending finger or engaging projection 18a at one end thereof and has an elongated hole 18b at a substantially central portion thereof. The engaging projection 18a of the slide plate 18 is located for abutting engagement with an engaging pin 12a mounted on a lower face of the other

end portion of the movable member 12. Thus, as the slide plate 18 is slidably moved in one direction, that is, in a rightward direction, the engaging projection 18a thereon is engaged with the engaging projection 18a of the movable member 12 and pivots the movable member 12 in the other direction, that is, in a counterclockwise direction against the biasing force of the coil spring 15. When the movable member 12 is at its limit position of pivotal motion in the other direction, that is, at its inoperative position, the left-hand side leading guide block 6 will not contact with the movable member 12 nor with the erasing head 14 when it slidably moves along the left-hand side guide slot 7 located near the movable member 12 .

The slide plate 18 is normally biased in the one direction, that is, in the rightward direction by a coil spring 21. The coil spring 21 has a greater spring force than the coil spring 15 of the movable member 12 and is secured at one end thereof to the one end of the slide plate 18 and at the other end thereof to a projection 1a of the chassis 1 extending through the elongated hole 18b of the slide plate 18 so that the slide plate 18 may be slidably moved within a range of the longitudinal axis of the elongated hole 18b. The pivotal plate 19 is mounted at one end thereof for

pivotal motion within a predetermined angular range on the lower face of the chassis 1 and has at the other end portion thereof an engaging pin 19a which extends into an elongated engaging hole 18c formed at the other end portion of the slide plate 18 so that as the pivotal plate 19 is pivoted, the slide plate 18 may be moved in the rightward or leftward direction by the pivotal plate 19. An engaging projection 19c is formed at and extends laterally from one side of the pivotal plate 19 with an end portion thereof located for engagement by an engaging projection 11a which is formed on an upper face of the left-hand side gear 11 and extends in an arc concentrical with the gear 11. Thus, as the gear 11 is rotated by a predetermined angle in one direction, that is, in a clockwise direction, the engaging projection 11a of the left-hand side gear 11 is engaged with the engaging projection 19c of the pivotal plate 19 and thus pivots the pivotal plate 19 in the counterclockwise direction. Consequently, the slide plate 18 is slidably moved in the leftward direction in FIG. 1 against the biasing force of the coil spring 21 so that the movable member 12 is pivoted in the one or clockwise direction by the biasing force of the coil spring 15.

Now, operation of the tape loading device 2 of the present invention having such a construction as

described above will be described.

In an unloading state as shown in FIG. 1, the movable member 12 is at its inoperative position, that is, at its limit position of pivotal motion in the counterclockwise direction against the biasing force of the coil spring 15. This is because the spring force of the coil spring 21 is stronger than that of the coil spring 15 so that the slide plate 18 assumes its rightmost position in which the projection 1a of the chassis 1 abuts with a left-hand side edge of the elongated hole 18b of the slide plate 18 and the movable member 12 follows the slide plate 18 through the engagement of the engaging pin 12a thereof with the engaging projection 18a of the slide plate 18. In the limit position of the movable member 12, the movable member 12 as well as the erasing head 14 thereon are positioned outwardly of a locus of sliding movement of the left-hand side leading guide block 6, or in other words, positioned in a position in which the leading guide block 6 and the erasing head 14 do not contact with each other.

In this state, if the motor is driven to rotate in one direction in order to effect loading of a tape, the left-hand side gear 11 is rotated in the clockwise direction while the other right-hand side gear 11 is

rotated in the counterclockwise direction. As the gears 11 are rotated in this manner, both the loading arms 4 are gradually expanded so that the leading guide blocks 6 thereon are slidably moved along the guide slots 7 until they are contacted with and stopped by the stoppers 10 at the ends of the guide slots 7. Upon such sliding movement of the leading guide blocks 6, a magnetic tape 22 within a cassette not shown is drawn out from within the cassette by the vertical poles 9 of the loading arms 4 and extended over a predetermined angular range on an outer periphery of the guide cylinder 3 as shown in FIG. 2, thereby ending the tape loading operation.

During such tape loading operation, the left-hand side leading guide block 6 passes in front of the erasing head 14 without contacting with the movable member 12 or the erasing head 14. Then, while the leading guide block 6 is slidably moved to the stopper 10 after it has passed in front of the movable member 12 and the erasing head 14, the engaging projection 11a of the one gear 11 is engaged first with an edge and then by an end of the engaging projection 19c of the pivotal plate 19. Consequently, the pivotal plate 19 is pivoted in the counterclockwise direction to slidably move the slide plate 18 in the leftward direction against the

biasing force of the coil spring 21. This allows the movable member 12 to be pivoted in the clockwise direction by the biasing force of the coil spring 15 to its operative position in which the erasing head 14 thereon is in contact with the magnetic tape 22 between the vertical pole (loaded position) 9 of the leading guide block 6 and the impedance roller 13a, as shown in FIG. 2.

On the other hand, if the motor is rotated reversely in the condition shown in FIG. 2, the various parts operate reversely to those described above until the unloading state as shown in FIG. 1 is restored. Upon such unloading operation, the engagement between the engaging projection 11a of the left-hand side gear 11 and the engaging projection 19c of the pivotal plate 19 is canceled before the leading guide block 6 reaches the movable member 12 or the erasing head 14. The disengagement between the engaging projections 11a and 19c allows the slide plate 18 to be slidably moved in the rightward direction in FIG. 2 by the biasing force of the coil spring 21 to pivot the pivotal plate 19 in the clockwise direction in the same figure. Meanwhile, as the slide plate 18 is slidably moved in the rightward direction, the engaging projection 18a at the other end thereof is contacted with the engaging pin 12a of the movable member 12 and pivots the movable member 12 in the counterclockwise direction in FIG. 2 against the

biasing force of the coil spring 15 until the movable member 12 and the erasing head 14 thereon are positioned outwardly of the locus of sliding movement of the left-hand side leading guide block 6 as shown in FIG. 1.

Therefore, the left-hand side leading guide block 6 is slidably moved to its initial position at an end of the guide left-hand side slot 7 remote from the stopper 10.

FIG. 3 is a plan view of a tape loading device showing another embodiment of the present invention. In FIG. 3, like parts or portions are denoted by like reference symbols to those of FIGS. 1 and 2, and overlapping description thereof is omitted herein to avoid redundancy. The tape loading device shown in FIG. 3 is constituted such that a pinch roller driving mechanism and a movable member driving means are interconnected so that they may operate in a cooperative relationship. In particular, referring to FIG. 3, a tape loading device 2 is associated with a pinch roller driving mechanism 30 located on a chassis 1 for moving a pinch roller 31 into or out of contact with a capstan 32.

The pinch roller driving mechanism 30 includes a pinch roller supporting mechanism 33 on which the pinch roller 31 is supported, a link member 34, a first transmitting mechanism 35 for rapidly moving the pinch

roller 31 toward the capstan 32, and a second transmitting mechanism 36 for strongly pressing the pinch roller 31 against the capstan 32. The pinch roller supporting mechanism 33 includes a pivotal member 37 supported for back and forth pivotal motion within a predetermined angular range on the upper face of the chassis 1, and a torsion coil spring 38 incorporated in the pivotal member 37. The pinch roller 31 is supported for rotation at the other end of the pivotal member 37. The torsion coil spring 38 is anchored at an end thereof in an anchoring hole not shown formed in the pivotal member 37, fitted at a central coiled portion thereof around a pivot shaft 37a of the pivotal member 37, and received at the other end thereof in a recess 34a defined by a laterally bent bifurcated end portion of the link member 34. The link member 34 is connected substantially at a central portion thereof for pivotal motion within a predetermined angular range to an end of a first slide member 39 of the first transmitting mechanism 35 and is connected at the other end thereof for pivotal motion to an end of a connecting arm 40 of the second transmitting mechanism 36. A connecting point at which the link member 34 is connected to the connecting arm 40 serves as a first point O₁ of application while another connecting point at which the

link member 34 is connected to the first slide member 39 serves as a second point O of application. The first transmitting mechanism 35² includes, in addition to the first slide member 39 which is mounted for longitudinal sliding movement within a predetermined range on the upper face of the chassis 1, a pivotal member 41 supported for pivotal motion within a predetermined angular range on the lower face of the chassis 1, and a second slide member 42 mounted for longitudinal sliding movement within a predetermined range on the lower face of the chassis 1. An engaging projection or laterally bent lug 39a is formed at the other end of the first slide member 39 and extends through a hole not shown of the chassis 1 and downwardly below the chassis 1 so that it may be engaged by the pivotal member 41. The pivotal member 41 has an engaging projection or laterally bent lug 41a formed thereon. The engaging projection 41a of the pivotal member 41 is received in a recess 42a formed at a portion of the second slide member 42 adjacent the other end of the second slide member 42. The second slide member 42 has an engaging projection or laterally bent lug 42b formed at a portion adjacent the other end of the second slide member 42. The engaging projection 42b of the second slide member 42 is received in an engaging hole 43a formed in a sector gear 43 which is

held in meshing engagement with a left-hand side one of a pair of gears 11 of a gear mechanism of the tape loading device 2. When the sector gear 43 is in its unloading position, that is, in a position as shown by two-dot chain lines in FIG. 3, the engaging projection 42b of the second slide member 42 engages with an end face of the engaging hole 43a of the sector gear 43. Thus, as the sector gear 43 is pivoted by a predetermined angle toward the loading side, that is, in a counterclockwise direction in FIG. 3, the engaging projection 42b of the second slide member 42 will soon be engaged by the other end face of the engaging hole 43a of the sector gear 43 and then pushed by the latter to slidably move in the leftward direction until an intended tape loading operation of the tape loading device 2 is completed. As the second slide member 42 is slidably moved in this manner, the pivotal member 41 is pivoted in the clockwise direction so that the first slide member 39 is pushed and slidably moved in the rightward direction by the pivotal member 41 as shown in two-dot chain lines. As the first slide member 39 is slidably moved, the link member 34 is pivoted in the clockwise direction displacing the second point O_2 of application rightwardly while the first point O_1 of application remains at its position so that the pinch

roller supporting mechanism 33 is pivoted rapidly in the counterclockwise direction to move the pinch roller 31 rapidly toward the capstan 32 from a home position in which the pinch roller 31 is spaced farthest away from the capstan 32 as shown by a two-dot chain line in FIG. 3 to an intermediate position at which a slight gap is left between the pinch roller 31 and the capstan 32 as shown by a long and short dash line.

The second transmitting mechanism 36 includes, in addition to the connecting arm 40, a first pivotal arm 44 and a second pivotal arm 45. The connecting arm 40 is connected at one end thereof for pivotal motion to the other end of the link member 34 and at the other end thereof for pivotal motion to one end of the first pivotal arm 44. The first pivotal arm 44 is supported at a substantially central portion thereof for pivotal motion on the upper face of the chassis 1. An engaging projection 45a is formed at an end portion of the second pivotal arm 45 and extends through a hole not shown formed in the chassis 1 and upwardly above the upper face of the chassis 1 until it is received in a recess 44a formed at the other end of the first pivotal arm 44. The second pivotal arm 45 has a substantially L-shape in plan and is supported substantially at a central portion thereof for pivotal motion within a predetermined range

on the lower face of the chassis 1. An engaging pin 45b is formed at the other end of the second pivotal arm 45 and normally engages with a first cam 47 of a cam plate 46 which is connected for forward and reverse rotation of a bi-directional motor not shown. Thus, as the cam plate 46 is rotated by a predetermined angle in the clockwise direction, the second pivotal arm 45 is pivoted in the clockwise direction so that the link member 34 is pivoted in the clockwise direction via the first pivotal arm 44 and connecting arm 40 displacing the first point O₁ of application leftwardly while the second point O₂ of application remains at its position. Consequently, the pinch roller supporting mechanism 33 is pivoted in the counterclockwise direction to move the pinch roller 31 thereon from the intermediate position as shown in long and short dash lines in FIG. 3 to an operative position in which the pinch roller 31 is contacted with and strongly pressed against the capstan 32 as shown in solid lines in FIG. 3. In the operative position of the pinch roller 31, it is resiliently pressed against the capstan 32 by the biasing force of the torsion coil spring 38 of the pinch roller supporting mechanism 33. The link member 34 is normally biased in the counterclockwise direction by a coil spring 48 so as to move the pinch roller 31 out of

contact with the capstan 32 and hold the engaging pin 45b of the second pivotal arm 45 of the second transmitting mechanism 36 in contact with the first cam 47 of the cam plate 46.

One end of a slide lever 49 is located for engagement with an engaging face 45c adjacent the other end of the second pivotal arm 45 of the second transmitting mechanism 36. The slide lever 49 is mounted for sliding movement within a predetermined range on the lower face of the chassis 1. A first arm 50 extends laterally from a side edge of a substantially central portion of the slide lever 49 and has a bent lug located for engagement with a side face of a take-up side brake member 51a for applying a braking force to a take-up side reel base 51. Thus, as the second pivotal arm 45 of the second transmitting mechanism 36 is pivoted in the clockwise direction in FIG. 3, the slide lever 49 is slidably moved in the leftward direction 3 so that the take-up side brake member 51a is pivoted in the counterclockwise direction against the biasing force of a spring not shown by the first arm 50 of the slide lever 49, thereby canceling the application of the braking force by the brake member 51 to the take-up side reel base 51.

A second arm 52 is formed in an integral

relationship at and extends in a perpendicular direction from the other end of the slide lever 49. One end of the second arm 52 is located for engagement with an engaging pin 12a of a movable member 12. Thus, as the slide lever 49 is slidably moved in the rightward direction in FIG. 3, the movable member 12 is pivoted in a counterclockwise direction against the biasing force of a coil spring 15 through engagement of the pin 12a on the movable member 12 and the end portion of the second arm 52 of the slide lever 49. When the movable member 12 is at its inoperative position, that is, at its limit position of pivotal motion in the counterclockwise direction, a leading guide block 6 will not contact with the movable member 12 nor with an erasing head 14 on the movable member 12. The slide lever 49 is normally biased in the rightward direction by a coil spring 21.

A link mechanism 54 interconnects the sector gear 43 and a second cam 55 of the cam plate 46 so that as the cam plate 46 is rotated forwardly and reversely, both of a pair of loading arms 4 may be expanded and contracted via the link mechanism 54 and the gear mechanism 5 including the gears 11 and sector gear 43.

Now, operation will be described.

At first, in an unloading condition, the various operable parts are at respective positions as shown in

two-dot chain lines in FIG. 3. Thus, the movable member 12 is at its inoperative position, that is, at its limit position of pivotal motion in the counterclockwise direction against the biasing force of the coil spring 15, and in the inoperative position of the movable member 12, the movable member 12 and the erasing head 14 thereon are positioned outwardly of a locus of sliding movement of the leading guide block 6, that is, positioned in a position in which the leading guide block 6 and the erasing head 14 do not contact with each other.

In this state, if a motor is driven to rotate in the forward direction in order to effect loading of a tape, the cam plate 46 is rotated in the counterclockwise direction. By such counterclockwise rotation of the cam plate 46, the sector gear 43 is pivoted in the counterclockwise direction via the link mechanism 54 of the tape loading device 2 so that the loading arms 4 are gradually expanded via the gears 11 one of which meshes with the sector gear 43. As the loading arms 4 are expanded, the leading guide blocks 6 (only one is shown) are slidably moved toward stoppers 10 within guide slots 7. As the leading guide blocks 6 are slidably moved, a magnetic tape 22 within a cassette not shown is drawn out from within the cassette by

vertical poles 9 on the leading guide blocks 6 and extended over a predetermined angular range on an outer periphery of a guide cylinder 3, thereby ending the tape loading operation.

During such tape loading operation, the left-hand side leading guide block 6 passes in front of the erasing head 14 without contacting with the movable member 12 or the erasing head 14. Then, while the leading guide block 6 is slidably moved to the stopper 10 after it has passed in front of the movable member 12 and the erasing head 14, the pinch roller driving mechanism 30 is operated. In particular, while the leading guide block 6 is slidably moved to the stopper 10 after it has passed in front of the movable member 12 and the erasing head 14, the second slide member 42 of the first transmitting mechanism 35 of the pinch roller driving mechanism 30 the engaging projection 42b of which member is engaged with the engaging hole 43a of the sector gear 43 is slidably moved leftwardly as the sector gear 43 is pivoted in the counterclockwise direction so that the first transmitting mechanism 35 is operated to pivot the pivotal member 37 for a first step as shown in long and short dash lines in FIG. 3 to rapidly move the pinch roller 31 to the intermediate position toward the capstan 32.

Then, when the leading guide blocks 6 of the tape loading device 2 are stopped by the stoppers 10 at the end of tape loading, the engaging pin 45b of the second pivotal arm 45 of the second transmitting mechanism 36 of the pinch roller driving mechanism 30 rides over from a smaller diameter portion to a larger diameter portion of the first cam 47 of the cam plate 46 so that the second pivotal arm 45 is pivoted in the clockwise direction thereby to operate the second transmitting mechanism 36. Consequently, the pivotal member 37 is pivoted for a second step to a position as shown in solid lines in FIG. 3 in which the capstan 32 is pressed against the pinch roller 31 with a magnetic tape 22 interposed therebetween so that the magnetic tape 22 may be fed in a predetermined direction by the capstan 32.

As the second pivotal arm 45 is pivoted in the clockwise direction, the slide lever 49 is pushed at the one end thereof by the engaging face 45c of the second pivotal arm 45 and thus slidably moved in the leftward direction together with the second arm 52 at the other end thereof against the biasing force of the coil spring 21. This leftward movement of the second arm 52 allows the movable member 12 to be pivoted in the clockwise direction by the biasing force of the coil spring 15 to its operative position in which the erasing head 14 is

in contact with the magnetic tape 22 as shown in solid lines in FIG. 3.

It is to be noted that if the cam plate 46 is rotated reversely in the clockwise direction in this state, the individual operating parts operate reversely to those described above until the individual initial positions shown in two-dot chain lines in FIG. 3 are restored. Also in this case, the leading guide blocks 6 do not contact with the movable member 12 nor with the erasing head 14.

CLAIMS:

1. A tape loading device wherein a tape guide is slidably moved along a path, passing in front of an erasing head carried on a movable member, to draw out a tape from within a cassette loaded in position and extend the tape along said erasing head and a guide cylinder in order to load the tape to its loaded position, said movable member being pivotable about a shaft on which an impedance roller is rotatably mounted, said device comprising a movable member driving means for keeping said movable member in an inoperative position in which said movable member and said erasing head do not interfere with said path of said tape guide until after said tape guide passes in front of said erasing head and for causing after said tape guide has passed in front of said erasing head, said movable member to move to an operative position in which said erasing head on said movable member is in contact with the tape between the loaded position of said tape guide and said impedance roller.

2. A tape loading device as set forth in claim 1, wherein said movable member driving means is associated with a mechanism for slidably moving said tape guide along said path.

3. A tape loading device as set forth in claim 1, wherein said movable member driving means is associated with a pinch roller driving mechanism for



moving a pinch roller into or out of contact with a capstan.

4. A tape loading device as set forth in claim 1, wherein said movable member driving means causes said erasing head to move into contact with the tape after said movable member has moved to a tape loading ending position.

5. A tape loading device as set forth in any one of the preceding claims, wherein said movable member driving means includes a first spring for biasing said movable member to the operative position, and means for normally keeping said movable member to the inoperative position against the biasing force of said first spring.

6. A tape loading device as set forth in claim 5, wherein said means for normally keeping includes a slide member mounted for limited sliding movement and located for engagement with said movable member, and a second spring having a greater spring force than said first spring and normally biasing said slide member to move said movable member to the inoperative position through engagement between said slide member and said movable member.

7. A tape loading device as set forth in claim 6, wherein said slide member is connected to a pivotal member located for operation by a member of a mechanism



* C L H S *

for slidably moving said tape guide along said path of said tape guide.

8. A tape loading device as set forth in claim 6, wherein said slide member is located for operation by a member of a pinch roller driving mechanism for moving a pinch roller into or out of contact with a capstan.

9. A tape loading device as set forth in claim 7, wherein said member of said pinch roller driving mechanism is a cam follower member to a first cam of a cam plate which has thereon a second cam for driving a mechanism for slidably moving said tape guide along said path of said tape guide, whereby, after said tape guide has been moved to an end position of said path thereof, said slide member is moved by said second spring to allow said movable member to be moved to said operative position by said first spring.

10. A tape loading device as set forth in any one of claims 6 to 9, wherein said movable member is a lever mounted for pivotal motion and having said erasing head carried at an end portion thereof.

11. A tape loading device substantially as hereinbefore described with reference to, and as shown in, Figs. 1 to 3 of the accompanying drawings.

